CLAIMS SHOWING CHANGES

1. (twice amended) A routing system for distributing packets in a network, wherein the packets originate at a source and are returned to a destination, both source and destination external with respect to the routing system, comprising:

a plurality of [port adapters] means for transferring packets to a destination and from a source[that receive the packets];

a plurality of route processing engines; and

a mechanism that performs a hashing function on at least a portion of network layer information, in the packets transferred to the routing system, to determine [a] an approximately even distribution of the packets to the route processing engines for processing by the engines, and

means for determining packets belonging to a same flow and their original order from the network layer information of the packets, the network layer information including at least the same source/destination and protocol,

means for preserving the original ordered packet flows by modifying the distribution by sending each ordered packet flow to a single route processing engine [the distribution being such that an original packet flow comprising the packets is preserved].

2. (twice amended) The routing system of claim 1, wherein the plurality of means for transferring packets includes [including] at least one uplink connection to an external network and at least one data port adapter connected to an external data interface component.

11. (twice amended) A routing system for distributing packets in a network, wherein the packets originate at a source and are returned to a destination, both source and destination external with respect to the routing system, comprising:

a plurality of network interfaces that transfer the packets to a destination and from a source;

a plurality of route processing engines;

a fabric interconnecting said plurality of network interfaces and said plurality of route processing engines;

wherein each of said plurality of network interfaces uses a hashing function to determine a distribution of the packets among said plurality of route processing engines; and

wherein the hashing function is carried out on at least a portion of network layer information in the packets, and

wherein the hashing function determines packets belonging to a same flow and their original order from the network layer information including at least the same source/destination and protocol, and

means for preserving the original ordered packet flow by sending the original ordered packet flow to a single route processing engine

[the distribution being such that an original packet flow comprising the packets is preserved].

17. (twice amended) A method for selecting one processing engine of a plurality of processing engines for processing at least one packet, the method comprising the steps of:

hashing [examining] at least a portion of network layer [flow]information of at least one packet to determine a distribution of the packets to the processing engines;

determining from the network layer information, including at least the source/destination and protocol, the at least one packet that belongs to an ordered packet flow, and

selecting the one processing engine to process the at least one packet thereby preserving the ordered packet flow [based upon, at least in part, the portion of the network layer flow information in such a way as to preserve an original packet flow comprising the at least one packet].

20. (amended) The method of claim [19] 17 , wherein the hash value is computed by logically XORing the addresses, the port, and the protocol type value.

21. (amended) The method of claim 17 [19], further comprising the steps of:

providing a table containing entries for use in selecting the one processing engine; and

selection one entry in the table specified by an index value, the index value being based upon the hash value, and

using the index value to direct the selection of the one processing engine for those related packets that belong to the same packet flow.

25. (amended) The method of claim [22] 17, wherein the at least one [original] ordered packet flow comprises a plurality of [original] ordered packet flows, and the step of hashing is performed such that only a single respective processing engine is selected to process respective packets belonging to a respective [original] ordered packet flow.

26. (amended) A system for selecting one processing engine of a plurality of processing engines for processing at least one packet, the system comprising:

means for [examining] hashing at least a portion of network layer [flow] information of the at least one packet [;] and determining therefrom a distribution of the packets to be sent to the processing engines, and further determining therefrom packets and their order that belong to a same flow wherein the information comprises one or more of the following network information: a network source address of the at least one packet, a network destination address of the at least one packet, a source port of the at least one packet, a destination address of the at least one packet, and a protocol type value of the at least one packet, and

means for selecting the one processing engine based upon, at least in part, the portion of the network layer [flow] information in such a way as to preserve an original packet flow comprising the at least one packet.

34. (amended) The system of claim 31, wherein the at least one [original] ordered packet flow comprises a plurality of [original] ordered packet flows, and the means for hashing

carries out the hashing such that only a single respective processing engine is selected to process respective packets belonging to a respective [original] ordered flow.

35. (amended) Computer-readable memory comprising computer-executable program instruction for selecting one processing engine of a plurality of processing engines for processing at least one packet, the instructions, when executed, causing:

hashing at least a portion of network layer [flow] information of the at least one packet[;] and determining therefrom a distribution of the packets to be sent to the processing engines, and further determining therefrom packets and their order that belong to a same flow, wherein the network layer information comprises one or more of the following network information a network source address of the at least one packet, a network destination address of the at least one packet, a source port of the at least one packet, a destination address of the at least one packet, and a protocol type value of the at least one packet, and

selecting of the one processing engine based upon, at least in part, the portion of the network layer [flow] information in such a way as to preserve an ordered [original] packet flow comprising the at least one packet.

37. (amended) Memory of claim [36] 35 wherein the examining comprises hashing the portion of the network layer flow information to produce a hash value, and the hash value is used, at least in part, to select the one processing engine.